

CLAIMS

1. An electrical connector comprising:  
an insulating housing;  
5 a plurality of contact elements provided in a  
widthwise direction of said insulating housing;  
at least one guide portion provided at a position  
where no said contact element is present and guiding said  
connector to a position for plugging with a mating  
10 electrical connector; and  
a lock portion provided at a top of said guide  
portion, having a shape of a substantially sphere or a  
shape of a polyhedron having a top view of a substantially  
circle, and locking a plugging condition of said electrical  
15 connector into said mating electrical connector.
2. The electrical connector according to claim 1,  
wherein said lock portion has a cut-off for enabling said  
lock portion to be resiliently deformed in a radial  
direction thereof.
- 20 3. The electrical connector according to claim 1,  
wherein said lock portion is made of a metal.
4. The electrical connector according to claim 3,  
wherein said lock portion is made by press.
5. The electrical connector according to claim 1,  
25 wherein said lock portion has an asymmetric shape.
6. An electrical connector comprising:  
an insulating housing;  
a plurality of contact elements provided in a  
widthwise direction of said insulating housing;  
30 at least one lock receiving portion provided at a  
position where no said contact element is present and made  
engageable with a lock portion of a mating electrical  
connector, which is provided at a top of said mating  
electrical connector and has a shape of a substantially

sphere or a shape of a polyhedron having a top view of a substantially circle, wherein said lock receiving portion has an engagement section having a curved surface or made resiliently deformed to engage said lock portion.

5           7. The electrical connector according to claim 6, wherein said lock receiving portion is made of a wire of a resilient material.

          8. The electrical connector according to claim 7, wherein said wire of said lock receiving portion is made a  
10 C-shaped ring spring.

          9. The electrical connector according to claim 6, wherein said lock receiving portion is made of two wires of a resilient material provided in parallel to each other.

          10. The electrical connector according to claim  
15 8, which further comprises fixed portions extending rearwardly from ends of said lock receiving portion to fix said lock receiving portion to said lock portion of said mating electrical connector.

          11. The electrical connector according to claim  
20 6, wherein said lock receiving portion is made of a plate of a resilient material.

          12. The electrical connector according to claim 6, which further comprises a metal shell having at least one through-hole for receiving said lock portion, wherein  
25 said through-hole has an asymmetric shape.

          13. An electrical connector assembly comprising a first electrical connector and a second electrical connector, said first electrical connector including:

          a first insulating housing;

30           a plurality of first contact elements provided in a widthwise direction of said first insulating housing;

          at least one guide portion provided at a position where no said first contact element is present and guiding

said first electrical connector to a position for plugging with said second electrical connector; and

5 a lock portion provided at a top of said guide portion and having a shape of a substantially sphere or a shape of a polyhedron having a top view of a substantially circle, and said second electrical connector including:

a second insulating housing;

a plurality of second contact elements provided in a widthwise direction of said second insulating housing;

10 at least one lock receiving portion provided at a position where no said second contact element is present and being engageable with said lock portion of said first electrical connector, said lock receiving portion having an engagement section having a curved surface or made

15 resiliently deformed to engage said lock portion, wherein a plugging condition of said first electrical connector into said second electrical connector is locked by engagement between said lock portion and said lock receiving portion.